

SHIV NADAR

INSTITUTION OF EMINENCE DEEMED TO BE
UNIVERSITY
DELHI NCR

Understanding Cancer: Current and Emerging Concepts

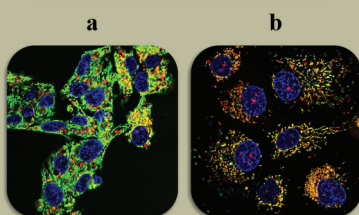
Shiv Nadar Institution of Eminence Campus

Department of Life Sciences
School of Natural Sciences

24th-29th March 2025

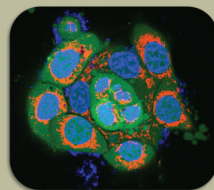
Carcinogenesis and Cancer Therapeutics

Detection of Mitochondrial Stress



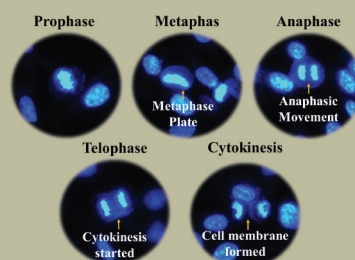
Hepatic (a) and breast (b) cancer cells showing generation of anti-cancer drug-induced ROS (red) in mitochondria (green). Cells were counter-stained with Hoechst (blue).

HER2+ Epithelial Breast Cancer Cells



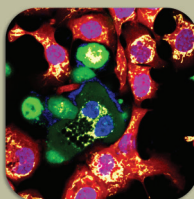
HER2+ breast cancer cells were stained with Calcein AM (green), TMEM (red) and Hoechst (blue) for detection of cell viability, mitochondrial membrane potential and nuclear integrity.

Different Stages of Cell Division



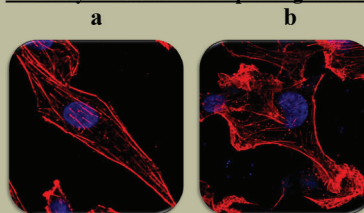
Formaldehyde-fixed TNBC cells were stained with DAPI to visualize different stages of cell cycle.

Crosstalk between Cancer Cells and Immune Cells



HER2+ breast cancer cells (red) were co-cultured with activated macrophages (green). Cells were counter-stained with Hoechst (blue) and MitoTracker (yellow).

Actin Cytoskeleton in Triple Negative Breast Cancer Cells



Drug naïve (a) and resistant (b) TNBC cells were stained with rhodamine-phalloidin (red) for detection of differences in actin cytoskeleton arrangements. Cells were counter-stained with Hoechst (blue).

Images are captured at 100X magnification.

The Carcinogenesis and Cancer Therapeutics laboratory is showcasing microscopic images detecting generation of reactive oxygen species, changes in mitochondrial membrane permeability, alterations in mitochondrial and nuclear integrity, reorganization of actin cytoskeleton under different conditions in different cancer cells. Image demonstrating interaction between cancer cells and macrophages is also included.

OBJECTIVE:

India ranks third globally in cancer burden, a challenge compounded by rising life expectancy, population growth, and detrimental lifestyle and environmental factors. This workshop is specifically designed for master's, PhD, and medical students from institutions with historically limited research infrastructure and funding. Our goal is to equip these students with invaluable exposure to esteemed national and international experts in the field. Through a dynamic blend of engaging lectures and hands-on activities, this workshop aims to inspire and guide the next generation of researchers, fostering a new wave of pioneers in Indian cancer research.

Organizers:

Professor Sanjeev Galande

Professor Colin Jamora

Dr Anindita Chakrabarty

Dr Jugal Das

Dr Shrijita Banerjee

Administrative contact:

Mr Anil Shukla

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AGENDA

DAY

1

Monday,
March 24th

7:30-8:15 AM	Breakfast (Dining Hall 2)
9:00-9:30 AM	Registration desk (Entrance to Room 021 in Block C; C021)
9:30-9:45 AM	Lamp lighting (C021)
9:45-10:00	Welcome address by Dr Sanjeev Galande (C021)
10:00-10:45 AM	Chief Guest lecture by Dr Neerja Bhatla (Padma Shri Awardee) (C021)
10:45-11:15 AM	Tea break (Block C and D atrium)
Session 1: Cancer hallmarks and origin (Room C021)	
11:15-12:00 PM (includes 10-minute Q&A)	Introduction to nature and hallmarks of cancer by Dr Anindita Chakrabarty, SNIoE
12:00-1:00 PM (includes 15-minute Q&A)	Stem cells plasticity and cellular origin of cancer by Dr Cedric Blanpain, Université Libre de Bruxelles (online)
1:00-1:30 PM	Chat with the speakers
1:30-2:15 PM	Lunch break (Block C-D atrium)
	Hands-on Session 1 (Room B310):
2:30-6:00 PM	Experimental techniques in measuring cancer cell growth, apoptosis, senescence and autophagy by Dr Anindita Chakrabarty
7:00-9:00 PM	Dinner (Dining Hall 2)

**DAY
2****Tuesday,
March 25th**

8:15-9:00 AM	Breakfast (Dining Hall 2)
Session 2: Cancer microenvironment (Room C021)	
9:15-10:00 AM (includes 10-minute Q&A)	T cells in cancer Immunity by Dr Jugal Das, SNIoE
10:00-10:45 AM (includes 10-minute Q&A)	Modulation of Immune Responses by Metabolic Reprogramming: Dr Jim Song, Texas A&M
10:45-11:15 AM	Tea break (Block C-D atrium)
11:15-12:00 AM (includes 10-minute Q&A)	New insights into the generation of myofibroblastic- and inflammatory-cancer-associated fibroblasts (CAFs): Dr Colin Jamora, SNIoE
12:00-12:45 PM (includes 10-minute Q&A)	Viral infection and cancer (tentative title) by Dr Naga Suresh Veerapu, SNIoE
12:45-1:15 PM	Chat with the speakers
1:15-2:15 PM	Lunch break (Block C-D atrium)
Hands-on session 2 (Room B310)	
2:30-6:00 PM	Experimental techniques in studying T cell immunity against cancer cells by Dr Jugal Das
7:00-9:00 PM	Dinner (Dining Hall 2)

**DAY
3****Wednesday,
March 26th**

8:15-9:00 AM	Breakfast (Dining Hall 2)
Session 3: Cancer drivers (Room C021)	
9:15-10:15 AM (includes 15-minute Q&A)	Tumor cell plasticity in colon cancer by Dr Frederic de Sauvage, Genentech Inc. Oncology (online)
10:15-11:00 AM (includes 10-minute Q&A)	Role of epigenetic regulation and cancer stem cells in colorectal tumorigenesis by Dr Sanjeev Galande, SNIoE
11:00-11:30 AM	Tea break (Block C-D atrium)
11:30-12:15 PM (includes 10-minute Q&A)	The chromatin tuning factor FOXD2 reprograms enhancer dynamics to govern cell fate decisions by Dr Tae-young Roh, Ewha Womans University, Seoul
12:15-1:00 PM (includes 10-minute Q&A)	Patient-derived Organoids and Xenografts Uncover Therapeutic Vulnerabilities in Signet Ring Cell Carcinomas of the colon and Rectum by Dr Sorab Dalal, Advanced Center for Treatment Research & Education in Cancer, Navi Mumbai
1:00-1:30 PM	Chat with the speakers
1:30-2:30 PM	Lunch break (Block C-D atrium)
2:30-4:00 PM	Research lab tour
5:30-7:00 PM	Tea and social gatherings (Block C-D atrium)
7:30-9:00 PM	Dinner (Dining Hall 2)

DAY
4

Thursday,
March 27th

8:15-9:00 AM	Breakfast (Dining Hall 2)
Session 4: Precision medicine in cancer (Room C021)	
9:15-10:15 AM (includes 15-minute Q&A)	Organoids in cancer treatment by Dr Senthil Muthuswamy, National Cancer Institute/NCI: (Mode TBD)
10:15-11:00 AM (includes 10-minute Q&E)	Defects in cell death in cancer by Dr Vivek Rangnekar, University of Kentucky
11:00-11:30 AM	Tea break (Block C-D atrium)
10:15-11:00 AM (includes 10-minute Q&A)	Translating cancer genomics to medicine by Dr Amit Dutt, University of South Delhi Campus
11:30-12:15 AM (includes 10-minute Q&A)	Indian Breast Cancer Genome Atlas: Promise of India-specific Biomarker Panels by Dr Shantanu Chowdhury, CSIR Institute of Genomics and Integrative Biology
1:00-1:30 PM	Chat with the speakers
1:30-2:15 PM	Lunch break (Block C-D atrium)
Hands-on session 4 (Room B310)	
2:30- 6:00 PM	Spheroid Bioreactor: Industry talk and demo
	or
2:30-6:00 PM	Modelling tumors as organoids by Dr Sanjeev Galande (Hands-on)
7:00-9:00 PM	Dinner (Dining Hall 2)

DAY
5

Friday,
March 28th

8:15-9:00 AM	Breakfast (Dining Hall 2)
Session 5: Evolution and cancer (Room C021)	
9:15-10:15 AM (includes 15-minute Q&A)	What does not kill cancer can make it stronger – Dynamical mechanistic modelling of drug-induced cell-state switching by Dr Mohit K Jolly: IISc Bangalore (online)
10:15-11:00 AM (includes 10-minute Q&A)	Using Evolutionary Ecology to Define, Understand and Treat Cancer by Dr Joel Brown: Moffitt Cancer Center Florida
11:00-11:30 AM	Tea break (Block C-D atrium)
11:30-1:00 PM	Demo/Hands-on Session 5: Evolutionary game theory modelling for understanding cancer (tentative title) by Ranjini Bhattacharya, Moffitt Cancer Center Florida (Room B310)
1:00-1:30 PM	Chat with the speaker
1:30-2:15 PM	Lunch break (Block C-D atrium)
Session 6: Cancer diagnosis/treatment in the clinic (Room C021)	
2:30-3:15 PM (includes 10-minute Q&A)	Current state of cancer treatment by Dr Lalit Kumar (Padma Shri Awardee), Oncology, Artemis Medical Center, Gurgaon
3:15-4:00 PM	Digital PCR: Industry talk
Hands-on session 6: (Room B310)	
4:00-6:00 PM	Digital PCR: Demo and hands-on
6:00-6:15 PM	Feedback form distribution (Room C021)
7:00-9:00 PM	Dinner (Dining Hall 2)

DAY
6

**Saturday,
March 29th**

8:15-9:00 AM	Breakfast (Dining Hall 2)
	Session 7: Use of AI in cancer (Room C021)
9:15-10:30 AM (includes interaction with students)	How Can Images Classify Cancers? by Dr Snehasis Mukherjee, SNloE
10:30-11:00 AM	Tea break (Block C-D atrium)
11:00-12:00 PM (includes 10-minute Q&E)	Predicting Breast Cancer Grade from PET-CT Modalities by Dr Dipti Prasad Mukherjee, ISI Kolkata
12:00-12:45 PM (includes 10-minute Q&A)	Bridging AI/ML and Genomics (tentative title) by Dr Sherry Bhalla, CSIR Institute of Genomics and Integrative Biology
12:45-1:15 PM	Chat with the speakers
1:15-2:15 PM	Lunch break (Block C-D atrium)
2:30-3:00 PM	Thank you note: Dr Colin Jamora (Room C021)
3:00-3:30 PM	Feedback form submission and certificate collection (Room C021)
3:30-4:30 PM	Campus tour
5:00 PM	Departure